NISTTech

Dielectric Slit Die for In-Line Monitoring of Liquids Processing

Measure multiple properties simultaneously in continuous liquid stream processes

Abstract

The dielectric slit die is an instrument that is designed to measure electrical, rheological, ultrasonics, optical and other properties of a flowing liquid. In one application, it is connected to the exit of an extruder, pump or mixing machine that passes liquefied material such as molten plastic, solvents, slurries, colloidal suspensions, and foodstuffs into the sensing region of the slit shaped die. Dielectric sensing is the primary element of the slit die, but in addition to the dielectric sensor, the die contains other sensing devices such as pressure, optical fiber, and ultrasonic sensors that simultaneously yield an array of materials property data. The slit die has a flexible design that permits interchangeability among sensors and sensor positions. The design also allows for the placement of additional sensors and instrumentation ports that expand the potential data package obtained.

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Citations

1. A.J. Bur, S.C. Roth and Y. Lee. A dielectric slit die for in-line monitoring of polymer compounding. Review of Scientific Instruments. Vol 75, No 4, 2004.
2. A.J. Bura, S.C. Roth and M. McBrearty. In-line dielectric monitoring during extrusion of filled polymers. Review of Scientific Instruments. Vol. 73, No 5, 2002.

References

- U.S. Patent # 7,143,637
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Status of Availability

This invention is available for licensing.

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